

Prenatal diagnosis of obstructions of the upper intestinal tract - a new endocrinological method

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In cases of polyhydramnios it is important to search for possible malformations such as obstructions of the upper intestinal tract. The radiological method with intraamniotic injection of dye may clarify the diagnosis rather late at the end of the second trimester. The evidence of fluid in fetal stomach by ultrasound may not prove active swallowing since the stomach can be filled from an oesophygo-tracheal fistula being present in most cases.

Following intraamniotic injection of dehydroisoandrosteronesulfate (DAH-S) - the most important oestrogen-precursor steroid during pregnancy - it is rapidly absorbed in the fetal intestinal tract after swallowing. In the placenta DHA-S is then converted to oestrone and 17 β -estradiol. A prominent increase of maternal plasma oestrogen levels can already be determined one hour after intraamniotic injection of DHA-S. This could be shown in 10 normal pregnancies in the 14th - 20th week of gestation that were legally interrupted by prostaglandine (Fig. 1).

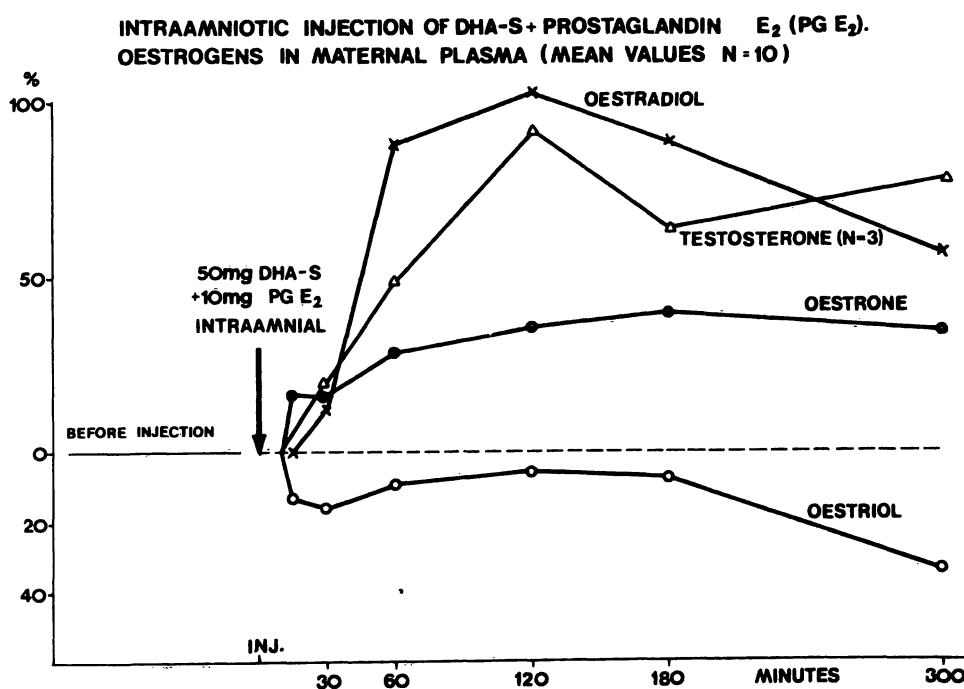


Fig. 1 - Increase of maternal plasma-oestrogens following intraamniotic injection of DHA-S (10 normal pregnancies, week 14 to 20).

In 14 patients with polyhydramnios (18th to 37th week) we injected 100 mg DHA-S intraamniotically. 10 times we determined a normal rapid increase of oestradiol (Fig. 2, upper curve). All newborns showed patent intestinal tracts. In 4 other cases an obstruction of the duodenum, the oesophagus (2 times) or the oral cavity was found after delivery. The mothers showed no significant increase of plasma Oe_2 after intraamniotic injection of DHA-S (Fig. 2, lower curve).

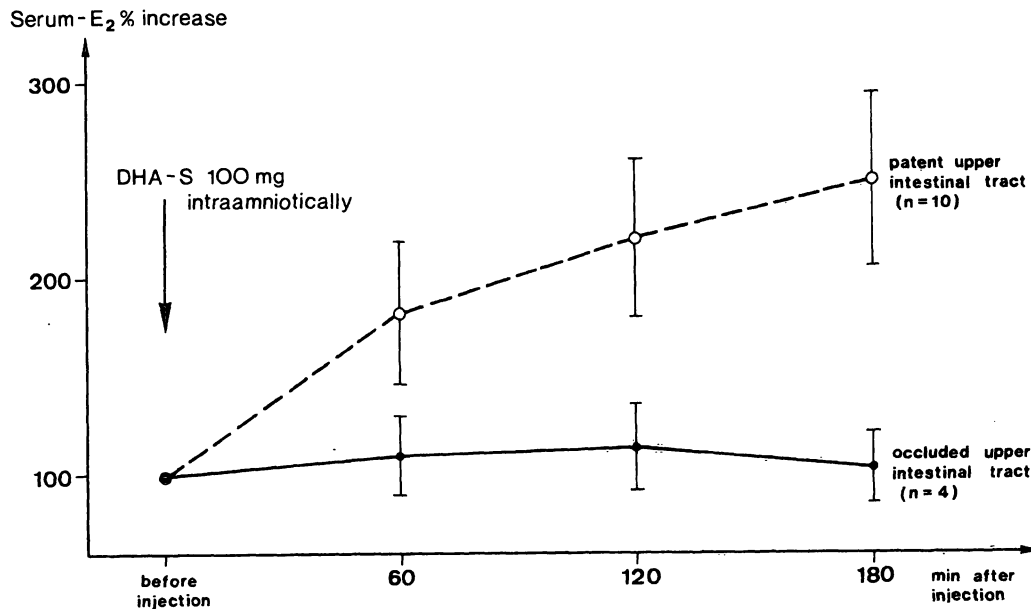


Fig. 2 - Increase of maternal plasma 17 β -oestradiol following intraamniotic injection of DHA-S in 14 patients with polyhydramnios.

From our results the intraamniotic injection of DHA-S and subsequent determination of maternal oestrogens in plasma or possibly in the 24 h-urine as well seems to be a reliable method for the detection of obstructions of the upper intestinal tract already during early pregnancy.

Beside the problems of amniocentesis the method bears no risks. As early as in the 14th week of pregnancy one can diagnose a malformation of the upper intestinal tract as possible cause of polyhydramnios.

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